

**WHAT IS CLAIMED IS:**

1. An IP packet transmission apparatus comprising:

multiplexing means;

said multiplexing means including means for sending to an IP network a  
5 multiplexed packet;

said multiplexed packet including a plurality of IP packets from terminals  
which are under command of said multiplexing means;

fragmentation means for fragmenting said multiplexed packet received  
through said IP network into a plurality of IP packets and for transferring said  
10 plurality of IP packets to terminals which are under command of said  
fragmentation means;

said multiplexing means including means for acquiring, with respect to a  
destination terminal, an identifier of said destination terminal and an IP address of  
a fragmentation means which has said destination terminal under its command;

15 a beginning of said multiplexed packet including said IP address of said  
fragmentation means which has said destination terminal under its command, and  
said multiplexed packet includes said identifier of said destination terminal and a  
portion removing an IP header from an IP packet; and

said identifier is smaller than that of said IP header.

20 2. An IP packet transmission apparatus set forth in claim 1, further  
comprising:

said multiplexing means including means for adding said identifier of said  
destination terminal after said IP address of said fragmentation means which has  
said destination terminal under its command, and then for adding said portion  
25 removing said IP header from said IP packet, to thereby prepare said multiplexed

packet.

3. An IP packet transmission apparatus set forth in claim 1, wherein said multiplexing means terminates preparation of a multiplexed packet after a predetermined period of time has elapsed.

5 4. An IP packet transmission apparatus set forth in claim 1, wherein said multiplexing means terminates preparation of a multiplexed packet when a record length of said multiplexed packet being prepared exceeds a predetermined length.

10 5. An IP packet transmission apparatus set forth in claim 3, wherein said multiplexing means terminates preparation of said multiplexed packet when a record length of a multiplexed packet being prepared exceeds a predetermined length.

6. An IP packet transmission apparatus set forth in claim 1, further comprising:

a multiplexing reference table in said multiplexing means;

15 said multiplexing reference table associates, with respect to said destination terminal, an IP address of said destination terminal, an identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command;

20 said multiplexing means, using said multiplexing reference table, includes means for acquiring said identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command, based on said IP address of said destination terminal;

a fragmentation reference table in said fragmentation means;

25 said fragmentation means, using said fragmentation reference table includes means for associating, with respect to a terminal which is under command of said fragmentation means, an IP address of said terminal, an identifier of said terminal

and said IP address of said fragmentation means; and

using said fragmentation reference table and based on an identifier contained in said multiplexed packet which is received, said fragmentation means includes means for acquiring an IP address of a corresponding terminal, and for preparing and transferring an IP packet.

7. An IP packet transmission apparatus set forth in claim 3, wherein:

said multiplexing means includes a multiplexing reference table which associates, with respect to said destination terminal, an IP address of said destination terminal, an identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command;

responsive to said multiplexing reference table, said multiplexing means includes means for acquiring said identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command, based on said IP address of said destination terminal;

said fragmentation means includes a fragmentation reference table which associates, with respect to a terminal which is under command of said fragmentation means, an IP address of said terminal, an identifier of said terminal and said IP address of said fragmentation means; and

responsive to said fragmentation reference table and based on an identifier contained in said multiplexed packet which is received, said fragmentation means includes means for acquiring an IP address of a corresponding terminal, and for preparing and transferring an IP packet.

8. An IP packet transmission apparatus set forth in claim 4, wherein:

said multiplexing means includes a multiplexing reference table which associates, with respect to said destination terminal, an IP address of said

destination terminal, an identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command;

responsive to said multiplexing reference table, said multiplexing means  
5 includes means for acquiring said identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command, based on said IP address of said destination terminal;

said fragmentation means includes a fragmentation reference table which  
10 associates, with respect to a terminal which is under command of said fragmentation means, an IP address of said terminal, an identifier of said terminal and said IP address of said fragmentation means; and

responsive to said fragmentation reference table and based on an identifier  
15 contained in said multiplexed packet which is received, said fragmentation means includes means for acquiring an IP address of a corresponding terminal, and for preparing and transferring an IP packet.

9. An IP packet transmission apparatus set forth in claim 5, wherein.

said multiplexing means includes a multiplexing reference table which  
20 associates, with respect to said destination terminal, an IP address of said destination terminal, an identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command;

responsive to said multiplexing reference table, said multiplexing means  
25 includes means for acquiring said identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command, based on said IP address of said destination terminal;

said fragmentation means includes a fragmentation reference table which

associates, with respect to a terminal which is under command of said fragmentation means, an IP address of said terminal, an identifier of said terminal and said IP address of said fragmentation means; and

responsive to said fragmentation reference table and based on an identifier contained in said multiplexed packet which is received, said fragmentation means includes means for acquiring an IP address of a corresponding terminal, and for preparing and transferring an IP packet.

10. An IP packet transmission method which deploys multiplexing means, which sends out to an IP network a multiplexed packet, comprising:

10 multiplexing a plurality of IP packets which are sent from terminals which are under command of said multiplexing means;

fragmenting in a fragmenting means said multiplexed packet received through said IP network into a plurality of IP packets;

15 transferring said packets to terminals which are under command of said fragmentation means, to thereby transmit an IP packet;

said multiplexing means acquiring, at a beginning thereof, with respect to a destination terminal, an identifier of said destination terminal and an IP address of fragmentation means which has said destination terminal under command of said fragmentation means;

20 said multiplexed packet is said IP address of said fragmentation means which has said destination terminal under its command, and said multiplexed packet includes said identifier of said destination terminal and a portion removing an IP header from an IP packet; and

25 said identifier has a smaller quantity of information than that of said IP header.

11. An IP packet transmission method set forth in claim 10, wherein:

said multiplexing means adding said identifier of said destination terminal after said IP address of said fragmentation means which has said destination terminal under its command, and further adding said portion removing said IP header from said IP packet after this, to thereby prepare said multiplexed packet.

12. An IP packet transmission method set forth in claim 10, wherein said multiplexing means terminates preparation of one multiplexed packet when a predetermined period of time has elapsed.

13. An IP packet transmission method set forth in claim 10, wherein said multiplexing means terminating preparation of one multiplexed packet when a record length of a multiplexed packet which is being prepared exceeds a predetermined value.

14. An IP packet transmission method set forth in claim 12, wherein said multiplexing means terminating preparation of one multiplexed packet when a record length of a multiplexed packet which is being prepared exceeds a predetermined value.

15. An IP packet transmission method set forth in claim 10, wherein said multiplexing means employing a multiplexing reference table which associates, with respect to said destination terminal, an IP address of said destination terminal, an identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command;

using said multiplexing reference table, said multiplexing means acquiring said identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command, based on said IP address of said destination terminal;

said fragmentation means has a fragmentation reference table which associates, with respect to a terminal which is under command of said

fragmentation means, an IP address of said terminal, an identifier of said terminal and said IP address of said fragmentation means; and

using said fragmentation reference table and based on an identifier contained in said multiplexed packet which is received, said fragmentation means acquiring an IP address of a corresponding terminal, and preparing and transferring an IP packet.

16. An IP packet transmission method set forth in claim 12, wherein said multiplexing means has a multiplexing reference table which associates, with respect to said destination terminal, an IP address of said destination terminal, an identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command,

using said multiplexing reference table, said multiplexing means acquiring said identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command, based on said IP address of said destination terminal;

said fragmentation means includes a fragmentation reference table which associates, with respect to a terminal which is under command of said fragmentation means, an IP address of said terminal, an identifier of said terminal and said IP address of said fragmentation means; and

using said fragmentation reference table and based on an identifier contained in said multiplexed packet which is received, said fragmentation means acquiring an IP address of a corresponding terminal, and preparing and transferring an IP packet.

17. An IP packet transmission method set forth in claim 13, wherein said multiplexing means includes a multiplexing reference table which associates, with respect to said destination terminal, an IP address of said destination terminal, an

identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command;

using said multiplexing reference table, said multiplexing means acquiring said identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command, based on said IP address of said destination terminal;

said fragmentation means includes a fragmentation reference table which associates, with respect to a terminal which is under command of said fragmentation means, an IP address of said terminal, an identifier of said terminal and said IP address of said fragmentation means; and

using said fragmentation reference table and based on an identifier contained in said multiplexed packet which is received, said fragmentation means acquiring an IP address of a corresponding terminal, and preparing and transferring an IP packet.

18. An IP packet transmission method set forth in claim 14, wherein said multiplexing means includes a multiplexing reference table which associates, with respect to said destination terminal, an IP address of said destination terminal, an identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command;

using said multiplexing reference table, said multiplexing means acquiring said identifier of said destination terminal and said IP address of said fragmentation means which has said destination terminal under its command, based on said IP address of said destination terminal,

said fragmentation means has a fragmentation reference table which associates, with respect to a terminal which is under command of said fragmentation means, an IP address of said terminal, an identifier of said terminal



and said IP address of said fragmentation means; and

using said fragmentation reference table and based on an identifier contained in said multiplexed packet which is received, said fragmentation means acquiring an IP address of a corresponding terminal, and preparing and transferring an IP packet.

19. A recording medium which holds an IP packet transmission program such that a computer can read said IP packet transmission program, comprising:

said IP packet transmission program deploying multiplexing means, which sends out to an IP network a multiplexed packet;

said program including means for multiplexing a plurality of IP packets which are sent from terminals which are under command of said multiplexing means, and fragmentation means, which fragments said multiplexed packet received through said IP network into a plurality of IP packets and transfers the packets to terminals which are under command of said fragmentation means, to thereby transmit an IP packet;

said multiplexing means acquires, with respect to a destination terminal, an identifier of said destination terminal and an IP address of fragmentation means which has said destination terminal under command of said fragmentation means;

located at the beginning of said multiplexed packet is said IP address of said fragmentation means which has said destination terminal under its command, and said multiplexed packet includes said identifier of said destination terminal and a portion removing an IP header from an IP packet; and

the record length of said identifier is set to be shorter than the record length of said IP header.